The Tools for System Analysis (TOSA) portal

data.ilri.org/tools

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CONTENTS

OVERVIEW

The Tools for System Analysis (TOSA) Portal is a joint initiative of the Humidtropics and Livestock and Fish Research Programs of the CGIAR which aims to increase transparency and accessibility to the tools that are used within these programs. The database of tools and methodologies allows researchers easy access to appropriate tools and methodologies to more effectively and efficiently perform livelihood research related to agriculture, livestock and fish. This open source platform allows researchers to rate as well as comment on the tools and methodologies to continue to better research in this field worldwide.

The TOSA portal offers a central location for sharing the tools, methodologies, examples and data that ensures maximum efficiency and optimization of research on the topics of agriculture and livestock. To prevent researchers from re-inventing the wheel, and ensuring that each is able to benefit from the lessons learned from other projects, we encourage researchers and project implementers to make use of this database of tools, as well as contribute tools they have, or are in the process of, developing.

Beyond providing feedback and rating tools already in the database, this portal welcomes contribution of new tools from any user. Please contact Catherine Pfeifer (c.pfeifer@cgiar.org) if you would like to contribute.

OBJECTIVE

In 2013, as an outcome of the Participatory Agriculture Research: Approaches, Design and Evaluation (PARADE) workshop, over 40 researchers compiled experience and share methodologies in the areas of livestock, fish and crops. The various tools and methodologies these researchers developed were uploaded to a database called the Tools for Systems Analysis (TOSA) portal, as a joint initiative of the Humidtropics and Livestock and Fish Research Programs of the CGIAR, with the objective to increase transparency and accessibility to the tools that are used within these programs. The database of tools and methodologies allows researchers to find appropriate tools and methodologies to more effectively and efficiently perform livelihood research related to agriculture, livestock and fish.

Now, nearly four years later, the database is being renovated and renewed for better user accessibility and therefore a broader impact. This is being achieved through an improved interface to the website and the development of online guides, and an integrated search tool.

The TOSA portal includes a range of relevant and substantial products representing significant research inputs from various CGIAR partners. Dissemination of these tools to scale out uptake is a CGIAR imperative. Documentation of these tools and their collection into an online portal is an important step in the right direction. The proposed inputs will substantially improve the accessibility of the toolkit supporting its use by partner development and research organizations.

By making this database of tools easily accessible and user friendly, tools will have a deeper impact and also be open to ongoing feedback. In addition, the toolkit should be used by partner research and development organizations, strengthening collaboration and mutual growth and learning. Through this portal, the worldwide community of researchers, project implementers and project developers working on livestock, agriculture and/or fish can build on each others work and find solutions collectively rather than in silos.

PORTAL

The TOSA portal is a key access point where all of the data in the TOSA database can be accessed. In order to make this portal as accessible and user friendly as possible, it is being redesigned to include new search criteria and additional search methods. In order to make the portal more user friendly, additional and more consistent tagging methods were applied, and the database was reviewed for relevance. Changes to the database are further discussed in the following section.

The new portal is scheduled for completion by December 2016.

RATINGS

The purpose of the ratings function of each tool is to provide feedback and allow researchers to build upon their findings. This function creates an open conversation between users and developers of specific tools, while at the same time allowing the TOSA community as a hole a virtual meeting place for brainstorming, commenting and collective development of ideas.

The ratings function will also be optimized in the new portal for December 2016.

DATABASE

The TOSA portal offers easy access to a series of tools to aid in research in the areas of development research and implementation of projects. Initially developed in 2013 as an outcome of the Participatory Agriculture Research: Approaches, Design and Evaluation (PARADE) workshop, the database was reviewed and updated in 2016.

As a result of the review in 2016, the database was cut down from 55 tools to 47 tools as if November 2016. The reduction was a result of an analysis of the tools in which the tool developers were emailed and asked for input. Tools were removed from the database if they were found to have inadequate information and therefore not useful to database users, if they were not yet complete, or if the developer felt that the tool did not belong in this particular database.

In addition to removing tools that were not found to be relevant, contributors were asked to update their tools in the database to by providing additional information that would make their tool easier to find, and help users to find what they are looking for in the TOSA portal. All tools that have been updated are marked with an asterisk (*).

The following tools are a combination of methodologies, guidelines, web and mobile applications, indices and other useful tools that are aimed at aiding research development and implementation of projects in the areas of livestock, fish and agriculture.

To contribute a tool you think will help other researchers develop or implement their projects, please contact Catherine Pfeifer: c.pfeifer@cgiar.org

Agricultural Biodiversity 4-Cell Focus Group Methodology

Overview

Using a 4-Cell participatory tool - we can identify and rank species regarding their availability and use i) on-farm ii) in the wild iii) in the markets and iv) in the diet. The tool creates an inventory of all useful plant and animal species that are cultivated or collected on farm in the communities being sampled and rank them in regards to how many households cultivate/collect and over what size land. The tool provides insights into how the nexus between Species' on-farm and in the wild availability, Market presence and relevance in the diet functions within the community. The next step is to rank how these species are sold and purchased on the market, using the 4-cell to identify how many households buy/sell and how frequently the transaction is done. Additional inventory is made of those species and foods that are purchased in the communities but not cultivated/reared/collected. The final step is to see how the species inventoried in the previous session are consumed, using the 4-cell to identify how many and how frequently households consume the foods. A final session on seed Systems helps to identify what the structure of local seed system is. A set of qualitative questions accompany each session (Availability, Markets, Diets and Seeds) which help provide additional information regarding the availability and use of species in the community. The tool can be used to identify best-bet entry points through answering research questions such as: 1. Which species can be promoted to improve dietary diversity and nutrition 2. Which species are underutilised or neglected and can they have a role in the local community 3. What are the relationships between farms, markets and diets and how can these be leveraged when designing an interventions

Summary of Uses

- Identifying entry points in agriculture - such as what species can be promoted for nutrition/diet, which species are underused, and the relationship between farms, markets and diets

Website:

N/A

Contributing Organization:

Bioversity International

AKT*

(Agro-Ecological Knowledge Toolkit)

Overview

Over recent years, there has been increasing awareness that local knowledge and practices should be recognised in developing initiatives aimed at sustaining and improving the livelihoods of farming communities and the environment. Interest amongst research, education and development institutions to investigate and document local knowledge has grown significantly over the last few years. Bangor University is a leading institution in the development of a knowledge-based systems methodology and software called the Agro-ecological Knowledge Toolkit (AKT). The AKT5 software was developed by Bangor University in conjunction with the Department of Artificial Intelligence at Edinburgh University. Through a close partnership, Bangor University works with the World Agroforestry Centre (ICRAF) to integrate AKT into international research and development projects in order to design more effective interventions that work on the ground. The aim of the toolkit is to elicit local ecological knowledge in a rigorous and systematic way in order for it to be robust enough to be useful for informing projects. It was designed to provide an environment for knowledge acquisition in order to create knowledge bases from a range of sources. It allows representation of knowledge elicited from farmers and scientists or knowledge abstracted from written material. The use of formal knowledge representation procedures offers researchers the ability to evaluate and utilise the often complex, qualitative information relevant stakeholders have on agro-ecological practices and the knowledge underlying these practices. The methodology associated with knowledge elicitation for the AKT5 system allows for formalized flexible knowledge bases to be created.

Local ecological knowledge refers to what people know about their natural environment, based primarily on their own experience and observation. Where management has a large impact on the natural resource base, it is useful to refer to it as agro-ecological knowledge, to emphasise the management component. The tool enables explicit representation of local knowledge through the use of a knowledge based systems approach. This is a methodology for formally representing qualitative knowledge on a computer. It is based on the premise that most knowledge can be broken down into short statements and associated taxonomies of the terms that are used in them. These can then be represented on a computer as a knowledge base using a formal grammar and a series of hierarchies of terms. Connections amongst statements can be explored by viewing sets of related statements as causal diagrams. The formal recording of knowledge in this way also makes it possible to use automated reasoning procedures to help evaluate and explore complex knowledge domains.

The toolkit has been used successfully in a number of projects in Asia, Africa and Latin America and has been adopted globally by ICRAF. Projects have included development of multi-strata cocoa and non-timber forest products in Ghana and Cameroon; jungle rubber, soil conservation and Javanese home garden systems in Indonesia; participatory plant breeding for cassava in Colombia; fodder systems in Nepal; forest gardens and smallholder rubber in Sri Lanka; range management in South Africa and Lesotho; trees in crop fields and rangelands in Kenya and Tanzania. A Spanish language version is used in Latin America by the Tropical Agricultural Research and Higher Education Centre (CATIE) and a Thai version has been developed in conjunction with the Department of National Parks, Wildlife and Plant Conservation in Thailand. The tool is also available in French and Spanish languages.

Summary of Uses

- Eliciting and analysing local ecological knowledge (what people know about their environment)

Website:

http://akt.bangor.ac.uk/

Contributing Organization:

International Livestock Research Institute (ILRI), World Agroforestry Center (ICRAF)

Area-Based Approach for Rural Agroenterprise Development

Overview

This guide provides the starting point for applying the strategy developed by CIAT's Rural Agroenterprise Development Project (RAeD), to address the entrepreneurial development needs of institutions that support rural communities. The methods, tools, and learning approaches described here, were the result of many collaborative projects undertaken over the past 10 years in Latin America, Africa, and South East Asia. The implementation draws heavily upon participatory methods that assist the facilitating institute to focus on realizing new business opportunities for rural communities. The basic steps in the process include: (i) Developing partnerships, area-based analysis, and planning. (ii) Market opportunity identification. (iii) Analyzing production chains and generating business plans. (iv) Implementing agroenterprise projects. (v) Strengthening business development services in rural areas. (vi) Evaluating and advocating for improved marketing policies. This approach was developed in response to demand from partners who wanted a systematic method for shifting from a food security strategy that focused on increasing production to a market-oriented approach that emphasizes local empowerment and building local skills for income generation and market engagement. The approach aims to provide rural communities with the basic skills to understand their market environment, identify market opportunities, design new agroenterprise projects, and integrate projects within market chains. This process is flexible and decisions will enable smallholders to adopt the most appropriate marketing strategy to assist their prospects for increased income, such as: 1. Improving the competitiveness of products in local and regional markets. 2. Achieving economies of scale through collective action and group marketing. 3. Diversifying into improved or higher value products linked to growth markets. 4. Adding value to products by changing farming practices to accesses higher income markets enhance product quality and incorporate processing activities

Summary of Uses

- Developing partnerships
- Analyzing production chains for business plans
- Identifying market opportunities
- Implementing agroenterprise projects
- Strengthening business development service area

Website:

http://ciat-library.ciat.cgiar.org:8080/jspui/bitstream/123456789/1128/2/Good_Practice_Guide_2.pdf

Contributing Organization:

CIAT's Rural Agroenterprise Development (RAeD) project

CCAFS Climate Analogues Tool*

Overview

"Scientific evidence gathered in the last couple of decades suggests that climate conditions are changing rapidly and that this trend will likely continue and even accelerate. Some regions may benefit from more favorable climate conditions to production (the few winners), while others (the larger group of losers) will face increased climate change-related biotic and abiotic stresses. Where conditions improve, the traditional farming systems will be challenged to exploit the additional production potential, and where conditions deteriorate, accelerated adaptation (incl. transformational and systemic) will be vital, as centuries-old coping mechanisms used by farmers may become insufficient or obsolete for that specific area.

The analogues approach is a novel way of supporting modeled policy recommendations with on-the-ground empirical testing. Analogues refer to sites or years that have conditions with statistical similarity, primarily in terms of current or future climate, but they can also include additional factors such as soils, crops, and socioeconomic characteristics. This helps link top-down global models (e.g. crop-climate or socio-economic models) with targeted field trials, on-farm information or visits and traditional knowledge.

In essence, the approach locates a site whose climate today is similar to the given future of a place of interest (e.g. where can we find today the future climate of Nairobi, Kenya?), or vice-versa (e.g. where can we find in 20130 the climate that we currently find in Nairobi?). Additionally, it can also identify ""homologue"" sites – sites that share similar conditions either today or in the future."

Summary of Uses

- Locating a site with a similar climate today to the given future of the place of interest, or vice versa
- On-the-ground empirical assessment of adaptation options in climatically simulated locations to support policy recommendations and scaling out
- Assessment of suitable areas for crops or crop varieties to facilitate knowledge and/or germplasm exchange
- Support farmers exchanges

Website:

http://www.ccafs-analogues.org

Contributing Organization:

International Center for Tropical Agriculture (CIAT)

Cluster Based Farmer Field School

Overview

Farmer Field Schools The Farmer Field School approach allows farmers to learn about alternative crop and livestock management practices and technologies with the aim of improving their own productivity; i.e. learning new ways to cope with old problems related to agriculture or livestock rearing (van den Berg & Jiggins 2007). At the same time, the approach allows farmers to investigate for themselves the costs involved and the different benefits of traditional and alternative practices, thus leading to swifter adoption of the successful practices or varieties of crops tested. The Farmer Field School learning process builds on the existing knowledge of farmers, enabling them to combine and evaluate new and existing technologies in their own fields and to adapt new technologies to their own environments. Once farmers are able to combine and evaluate these technologies they will become more responsive to changing conditions, such as that of Striga and soil fertility, and will thus be able to develop cropping systems that are more productive, profitable and sustainable (van Mourik, et al., Undated). Farmer-to-farmer video In West Africa, the International Crops Research Institute for the Semi Arid Tropics (ICRISAT) built on experiences gained by the Africa Rice Center (AfricaRice) in developing a series of ten farmer-to-farmer videos. The ten films are now being widely shown to support rural learning on practical and affordable ways to control one of Africa's most serious weeds - striga. Strong participation of farmers has been key to the film making process. First and foremost, the knowledge and farming techniques shared in the videos have been developed over a number of years within farmer field schools. ICRISAT and partners established the schools, starting in the early 2000s, to support farmer experiments on a wide range of striga control options. The result was the development of an integrated set of striga and soil fertility management practices (ISSFM) for use in sorghum and pearl millet cultivation.

Summary of Uses

- Facilitating farmers learning about alternative crop and livestock management practices and technologies, improving productivity

Website:

http://hope.icrisat.org/wp-content/uploads/2011/09/GuideCBFFS-ISSFMRevision-edited-4TVM.pdf

Contributing Organization:

International Crops Research Institute for the Semi Arid Tropics (ICRISAT)

Codes/Dramas for Farmer Learning

Overview

Drama and role plays by community members are used to enable people to communicate to different partners their perceptions of current situations versus desired changes. May include poetry, role plays and focus group discussions (Mapfumo et al., 2013).

Summary of Uses

- Role playing to enable people to communicate to different partners their perception of current situations

Website:

http://www.sciencedirect.com/science/article/pii/S2211464512001224

Contributing Organization:

N/A

ComMod

Participatory Companion Modeling

Overview

ComMod is a variation of mutli-agent systems modelling. The main principle of the companion modeling (ComMod) approach is to develop simulation models integrating various stakeholders' points of view and to use them within the context of the stakeholders' platform for collective learning. This is a modeling approach in which stakeholders participate fully in the construction of models to improve their relevance and increase their use for the collective assessment of scenarios. The general objective of ComMod is to facilitate dialogue, shared learning, and collective decision making through interdisciplinary and "implicated" research to strengthen the adaptive management capacity of local communities. By using such an approach, we expect to be in a better position to deal with the increased complexity of integrated natural resource management (INRM) problems, their evolving and continuous characteristics, and the increased rapidity of evolutions and changes in number of stakeholders (Gurung, et al., 2006). ComMod is a cyclic process of three stages that can be repeated as many times as needed: - Field investigations and a literature search to help generate explicit hypotheses for modeling. - Modeling, i.e., the conversion of existing knowledge into a formal tool to be used as a simulator. - Simulations, conducted according to an experimental protocol either on a computer or through a role-playing game (RPG), to challenge the former understanding of the system and to identify new key questions for new focused investigations in the field. The resulting mutli-agent systems model can be implemented either through a computerized model or through a role playing game. We named this process "companion modeling" because it is used in the mediation process (the social dimension of the companion) and it co-evolves with this social process (temporal and adaptive dimensions) (Gurung, et al., 2006)

Summary of Uses

- Facilitating negotiation over natural resources
- Developing simulations
- Integrating various stakeholders' points of view and developing shared learning platform

Website:

http://cormas.cirad.fr/ComMod/en/

Contributing Organization:

Challenge Program on Water and Food (CPWF)

COMPASS*

(Co-Innovation and Modeling Platform for Agro-Eco System Simulation)

OVERVIEW

The COMPASS (Co-innovation and Modeling Platform for Agro-eco System Simulation) framework that integrates modeling tools at field, farm and landscape scales has been developed to support experiential learning and decision-making in participatory settings. The framework consists of a set of widely applied simulation, optimization and visualization tools that differ in their representation of social-ecological systems, and in the spatial and temporal dimensions addressed. Moreover, the architecture of the modeling framework allows rapid model development, reconfiguration and deployment.

The field-scale modules of COMPASS quantify effects of management of soil, crops, grasslands and semi-natural landscape elements, and comprise complete technology packages including crop choices and rotations and their management. Resulting indicators include e.g. crop yields, soil carbon and nutrient dynamics, water balances and soil erosion). Model outcomes at field scale can be aggregated to farm-scale modules, which may be spatially implicit or explicit, static or dynamic, and can use different optimization methods. Typical farm level indicators such as nutrient balances, productivity, and economic and environmental performance are quantified and their dynamics simulated). Indicators at landscape level may be derived from aggregation from field and farm scales indicators, or represent emerging properties that are only relevant at landscape level, such as the spatial coherence of landscape elements, or indicators of landscape quality. At the farm level farmers and their advisors are the main stakeholders, whereas at the landscape level a large range of stakeholders can be identified, such as cooperatives and governmental and non-governmental organizations. The diversity of farm types and styles is captured through functional typologies, while biophysical dynamics at higher scales can be explicitly coupled in COMPASS to socio-institutional dynamics represented in agent-based models.

In the COMPASS framework, we use heuristic optimization techniques such as evolutionary algorithms (EAs) with Pareto-optimality as a selection criterion and multi-criteria methods to link supply and demand of ecosystem services. New farm and landscape management alternatives can be generated by changing resource management in existing solutions randomly, deliberately or by perturbation and recombination of existing alternatives. Each alternative is then evaluated in terms of the objectives that represent relevant ecosystem services. Evaluation may involve application of static or dynamic disciplinary models, pertain to one or several spatial and temporal scales, and can be carried out assuming stable conditions or uncertainty and environmental change. Methods to quantify indicators and the related data sources can be quite heterogeneous, ranging from survey, monitoring or experimental data, established empirical relations, or calibrated and validated computer simulation models, to expert knowledge and rules of thumb.

Some tools in the framework: - FarmDESIGN: farm level analysis of production, nutrient cycling, soils, economy, labour, biogas production, GHG emissions, human nutrition - Landscape IMAGES: spatially explicit exploration of tradeoffs and synergies - FuzzyDANCES: drawing and simulating fuzzy cognitive maps - Landscape DISPLAY: simulation of dispersal of organisms in landscapes - FarmSTEPS: spatio-temporal exploration of cropping plans - ActorIMAGES: a set of agent based models on Netlogo - ROTAT: rotation planning and evaluation for productive, environmental and economic performance

SUMMARY OF USES

- FACILITATING EXPERIENTIAL LEARNING AND DECISION-MAKING IN PARTICIPATORY SETTING

Website:

https://sites.google.com/site/farmdesignmodel/

Contributing Organization:

International Maize and Wheat Improvement Center (CIMMYT), Wageningen University and Research Centre (WUR)

Dietary Diversity and Quality Scores

Overview

The dietary diversity questionnaire consists of 2 parts: 1) the part in which the respondent is asked about all the foods (and ingredients) (s)he consumed the previous day and 2) the part in which these foods (ingredients) are categorized into 16 food groups. WDDS (women's dietary diversity score): for women of child bearing age, validated and internationally recognized, based on a 9 food group count consumed during the previous day (24 h) (FAO 2013) Min-WDDS: For women of reproductive aged, recently validated and internationally recognized, counting the proportion of women consuming 5 or more out of 10 food groups during the previous day (24h) IYC DDS (Infants and young children dietary diversity score): for infants and young children between 6 and 23 months old, validated and internationally recognized, counting the proportion of children consuming 4 or more out of 7 food groups during the previous day (24h) (WHO 2010)

Summary of Uses

- Obtaining detailed data on household food access or individual dietary intake

Website:

http://www.fao.org/3/a-i1983e.pdf

Contributing Organization:

International Livestock Research Institute (ILRI), Food and Agricultural Organization (FAO)

Diversity Field Fora and Seed Fairs

Overview

Diversity field fora and seed fairs are a way of valuing farmers' contributions to conservation and development of crop genetic diversity. A fora or fair is an exchange of information at different levels; villagers, local decision, makers, researchers etc. and encourages an exchange of practices for management and conservation among farmers from different villages and between farmers and researchers.

Summary of Uses

- Valuing farmers' contributions to conservation and development of crop genetic diversity
- Exchanging information informally at different levels; villagers, local decision makers, researchers, etc.

Website:

N/A

Contributing Organization:

Bioversity International

EXTRAPOLATE*

(EX-ante Tool for RAnking POLicy AlTErnatives)

OVERVIEW

EXTRAPOLATE (EX-ante Tool for RAnking POLicy AlTErnatives) arose out of the need for a decision support tool to assess the impact of different policy measures. By disaggregating the effects of policy interventions the tool facilitates discussion of the relevant issues and enables users to visualize the predicted impacts of policy interventions, based on numerical analysis. The tool serves as a "filter" that allows the user to sift through, in an ex-ante fashion, a range of policy measures to identify those that could be applied in a specific situation to achieve particular outcomes that further particular policy objectives. Whilst originally developed in the context of policy analysis, EXTRAPOLATE can be easily applied in the context of more technical interventions. In essence, for a particular theme (e.g. a dairy sector) relatively homogeneous "stakeholder groups" are first identified (a commodity chain approach can be helpful in deciding who is involved and where), and these groups are assigned a livelihood status (or some other currency of "wellbeing"). The constraints that they face in relation to the particular theme are then identified and linked by scoring their relevance to the different groups. "Outcomes" are then identified as the measurable effects of relaxing these constraints, and the impact of these outcomes on livelihood status is estimated. Thus the present (ex-ante) situation is described, and policy or institutional interventions can then be introduced. Their effects are estimated in terms of their impacts on constraints, which result in certain outcomes, which, in turn, influence the livelihood status of the different stakeholder groups. The tool has the further characteristic that it is participatory in nature, encouraging stakeholder involvement and discussion around the likely impact of policy change.

SUMMARY OF USES

- VISUALIZING THE PREDICTED IMPACTS OF POLICY MEASURES;
- FILTERING POLICY MEASURES TO DETERMINE WHICH CAN BE APPLIED

WEBSITE:

HTTP://WWW.PROLINNOVA.NET/FLD

CONTRIBUTING ORGANIZATION:

Overseas Development Institute (ODI)

FEAST*

(Feed Assessment Tool)

Overview

Feed for livestock is often cited as the main constraint to improved productivity in smallholder systems. Overcoming this constraint often seems an elusive goal and technical feed interventions tend to adopt a scattergun or trial and error approach which often fails to adequately diagnose the nature of the feed problem and opportunities and therefore the means to deal with problems and harness opportunities. The purpose of the Feed Assessment Tool described here is to offer a systematic and rapid methodology for assessing feed resources at site level with a view to developing a site-specific strategy for improving feed supply and utilization through technical or organizational interventions. The Feed Assessment Tool (FEAST) is a systematic method to assess local feed resource availability and use. It helps in the design of intervention strategies that will optimize feed utilization and animal production. The tool comprises two main elements: - A focused PRA exercise which provides an overview of the farming system with particular emphasis on livestock feed aspects. - A simple and brief quantitative questionnaire, designed to be completed by experts under the guidance of the Feast facilitator. Output from 'FEAST' consists of a short report in a defined format along with some quantitative information on overall feed availability, quality and seasonality which can be used to help inform intervention strategies. In addition FEAST generates a prioritized list of feed intervention strategies which are assessed as being potentially suitable for the study location. The prioritized list is based on matching characteristics of a given village/community with the requirements of a particular intervention. These characteristics include factors such as land and labour availability, dominant farming system, main livestock commodity etc. The tool is aimed at research and development practitioners who are working in the livestock sector and need a more systematic means of assessing current feed-related strategies and developing new ones.

Summary of Uses

- Assessing local feed resource availability and use, and optimizing feed utilization and animal production

Website:

http://www.ilri.org/feast

Contributing Organization:

International Livestock Research Institute (ILRI), Australian Centre for International Agricultural Research (ACIAR)

Gender and Value Chains*

Overview

We have developed and used a quasi-experimental design and index to measure women's intra-household bargaining position. We hope this tool can capture women's perceived bargaining position and by doing so over come the pitfalls of measuring bargaining power based on indicators. The tool can be further developed and used to measure the bargaining position of any household member in relation to other household members. The index can also be developed further into a bargaining model equation that helps to calculate the position of any household member in household decision making process.

Summary of Uses

- Capturing women's (or any household members) perceived bargaining position

Website:

http://www.tandfonline.com/doi/abs/10.1080/00220388.2016.1139693

Contributing Organization:

N/A

Happy Strategies*

Overview

The Happy Strategies game is a participatory communication tool to engage discussion and learning around integrated rainwater management. It can be adjusted to be played with very different players: it can serve as a quick rural appraisal tool for communities, as tool to enable exchange of knowledge between policy-makers and scientist or as a teaching tool.

Summary of Uses

- Engaging discussion and learning around integrated rainwater management
- Appraising and exchanging knowledge of/with local communities
- Teaching local communities and/or policy-makers

Website:

http://happystrategies.wikispaces.com/

Contributing Organization:

International Livestock Research Institute (ILRI), International Water Management Institute (IWMI), Challenge Program on Water and Food (CWFP)

HUMIDTROPICS SIMILARITY ANALYSIS*

OVERVIEW

The Humidtropics program of the CGIAR, aims to help poor farm families in tropical Africa, Asia and Americas to boost their income from integrated agricultural systems' intensification while preserving their land for future generations. Four action areas have been defined, in Eastern Africa, Western Africa, Central America and Mekong area. Each of the action areas is subdivided into action sites. Research in the different action site will be conducted, among other identification of best bet innovation to improve agricultural livelihoods. Innovations that improve these rural livelihoods work in a particular location but might not be a solution in another location with different characteristics. Understanding the context within which research operates is crucial to understand where else the acquired knowledge can applied and define the out-scaling potential. Up to recent, context was mainly understood as the biophysical environment, for which full coverage often satellite image derived geographical information exist. However, in complex agricultural systems, uptake and spreading of innovation is often more driven by socio-economic and institutional context than the biophysical environment. It is therefore crucial to define context in a broader way. Similarity analysis tries to understand these contexts and map them out. It allows addressing two different but complementary questions. First of all, to what extend is a given site similar to another sites? This allows to predict cross-site learning. Secondly, where else in the region can a similar context be found? This allows to define the extent of potential out-scaling of the best bet innovations and lessons learnt. The objective of this report is present a generic similarity analysis for each of the action sites of the Humid Tropic program and define the out-scaling and cross-site learning potential. The similarity analysis tool allows to find area with similar characteristics to a study site. It runs tree types of similarity: principal component, Mahalanobis distance and Bioclim distance.

SUMMARY OF USES

- VISUALIZING SIMILARITY OF SOCIO-ECONOMIC AND INSTITUTIONAL CONTEXT IN EASTERN AFRICA, WESTERN AFRICA, CENTRAL AMERICA AND MEKONG AREA (THROUGH MAPS DEVELOPED USING A SIMILARITY ANALYSIS)
- EVALUATING THE EUCLIDIAN SIMILARITY, MAHALANOBIS SIMILARITY AND MULTIVARIATE ENVIRONMENTAL SIMILARITY SURFACES OF THE AFOREMENTIONED REGIONS.

WEBSITE:

HTTP://DATA.ILRI.ORG/TOOLS/DATASET/9C302166-644F-49BC-9FA0-F688B9380C74/RESOURCE/DB4036DA-F151-408A-BCF1-BB350B878AFD/DOWNLOAD/SIMILARITYANALYSIS.PDF

CONTRIBUTING ORGANIZATION:

International Livestock Research Institute (ILRI), International Institute for Applied Systems Analysis (IIASA)

HUMIDTROPICS SITUATIONAL ANALYSIS CHECKLIST*

OVERVIEW

There are 3 primary objectives for the Humidtropics situational analysis (SA): 1. To characterize broadly all important system aspects that are relevant to the CRP within the target Action Sites and, through that, generate information to inform all other Program activities to better attain the Intermediate Development Outcomes (IDOs), as well as to inform ongoing field site selection. 2. To harness the various partner skills and experiences to develop a common and shared understanding of the issues that need to be addressed and potential solutions, particularly between international and national partners, allowing local and global expertise to play complementary roles. 3. To initiate and facilitate engagement with stakeholders and partners as part of the R4D platform development that is needed for the long-term success and scalability of the Program. The tool itself is the outline for SA. It provides a description of the context of a Humidtropics situational analysis, and suggestions on how to undertake the analysis, choose the people implementing it, monitor its implementation. It also provides a list of indicators that are relevant for the analysis.

SUMMARY OF USES

- SHARING OF DATA OF FIELD SITES
- COLLABORATIVE PROBLEM SOLVING
- STAKEHOLDER ENGAGEMENT

WEBSITE:

HTTP://DATA.ILRI.ORG/TOOLS/DATASET/97BF716E-360F-4930-9FB4-B59F8E1498F4/RESOURCE/8419D032-F997-4D93-B26D-ED56B27716AD/DOWNLOAD/HOWTOORGANIZEAHUMIDTROPICSSITUATIONALANALYSISLAUNCHMEETING141118.PDF

CONTRIBUTING ORGANIZATION:

International Livestock Research Institute (ILRI)

IMPACT

International Model for Policy Analysis and Agricultural Commodity Trade

Overview

The IMPACT (International Model for Policy Analysis and Agricultural Commodity Trade) model is designed to examine alternative futures for global food supply, demand, trade, prices, and food security. The model enables users to provide both fundamental, global baseline projections of agricultural commodity supply, demand, trade, prices and malnutrition outcomes along with cutting-edge research results on quickly evolving topics such as bioenergy, climate change, changing diet/food preferences, and many other themes. IMPACT covers over 40 commodities, which account for virtually all of world food production and consumption, including all cereals, soybeans, roots and tubers, meats, milk, eggs, oils, meals, vegetables, fruits, sugar and sweeteners, and other foods in a partial equilibrium framework. It is specified as a set of 115 country-level supply and demand equations where each country model is linked to the rest of the world through trade.

Summary of Uses

- Examining alternative futures for global food supply, demand, trade, prices and food security

Website:

https://ccafs.cgiar.org/impact-modeling-suite-examining-alternative-futures-global-food-supply#.V9V5uhWVvGd

Contributing Organization:

International Food Policy Research Institute (IFPRI), CGIAR Research Program on Policies, Institutions, and Markets (CRP - PIM)

IMPACT LITE

OVERVIEW

ImpactLite is a household survey tool, implemented in OpenDataKit which captures critical data from farming households in regard to generating farm household typologies, providing data for simulation models and as a basis for impact assessments, with a special regard to the Humidtropics IDOs.

SUMMARY OF USES

- CAPTURING CRITICAL DATA FROM FARMING HOUSEHOLDS IN REGARD TO GENERATING FARM HOUSEHOLD TYPOLOGIES, PROVIDING DATA FOR SIMULATION MODELS AND AS A BASIS FOR IMPACT ASSESSMENT, WITH A SPECIAL REGARD TO THE HUMIDTROPICS IDOS

WEBSITE:

HTTPS://DATAVERSE.HARVARD.EDU/DATASET.XHTML?PERSISTENTID=DOI:10.7910/DVN/24751

CONTRIBUTING ORGANIZATION:

INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE (ILRI); WORLD AGROFORESTRY CENTRE (ICRAF)

INPAC-S*

OVERVIEW

The InPaC-S Participatory approach and methodological guide (Portuguese for Integração Participativa de Conhecimentos sobre Indicadores de Qualidade do Solo, or Participatory Knowledge Integration on Indicators of Soil Quality) are the result of more than 10 years of South-South collaboration and knowledge sharing between Latin American and Africa.

The methodological guide was jointly published by the World Agroforestry Centre (ICRAF), the Brazilian Agricultural Research Corporation (Embrapa), and the International Centre for Tropical Agriculture (CIAT) following three years of synthesis and further development with representatives of farmer communities, governmental and non-governmental rural extension and advisory services, national and state research institutions and universities in Brazil. Regional workshops were conducted in the five most important, and also contrasting biomes, namely, the "Pantanal" wetlands and humid savannas, the "Amazon" tropical rainforest, "Cerrado" savanna grass with low trees and shrubs, the "Caatinga" semiarid thorny scrub forest, and the "Mata Atlantica" moist tropical forest involving Embrapa researchers and key stakeholders with support of the Embrapa Fund to the CGIAR.

The InPaC-S methodological guide was designed to facilitate bottom up approaches that integrate local knowledge into the soil management decision making processes and strengthen the relevance, credibility and legitimacy dimensions required for the increased adoption of improved management practices. This methodological guide describes how to apply participatory tools in identifying, classifying and prioritizing local indicators of soil quality which are summarized in the Synthesis Matrix tool. It also describes how to integrate these local indicators in the structure of global technical/scientific knowledge of soil science and agricultural management which is summarized in the Integration Matrix tool. This is followed by a knowledge sharing process aiming at building farmer community consensus on how to best address soil fertility constraints identified following agroecological management principles and the co-development of integrated soil fertility management (ISFM) options.

The process is concluded with the Soil's Fair where farmers and trainees split into four groups that rotate through four thematic tables where simple soil quality assessment demonstrations are provided. Participatory methodologies used to develop a "hybrid" knowledge base, combining local and scientific knowledge, reflect an effort to understand the complexity of the land management decision making. The conceptual basis of the InPaC-S methodological approach is that local knowledge and scientific knowledge share a number of common 'core' concepts; however, each knowledge system has gaps that in many cases can be complemented by each other.

New research for development efforts should rely on an expanded shared knowledge that blends local and global scientific knowledge that is more relevant, credible and legitimate to small farmer communities. This is part of a continuing effort to develop land health monitoring systems that strengthen local environmental/agricultural institutions and communities with tools that support local decision-making in natural resource management and promote sustainable land use in agricultural landscapes. More recently, the Africa-Brazil Agricultural Innovation Marketplace provided the financial support for a team of Embrapa and ICRAF scientists to bring the InPaC-S methodology to Africa and the opportunity to contribute to the efforts of this effective platform for South-South collaboration.

SUMMARY OF USES

- APPLYING PARTICIPATORY TOOLS IN IDENTIFYING, CLASSIFYING AND PRIORITIZING LOCAL KNOWLEDGE ON INDICATORS OF SOIL QUALITY AND SOIL FERTILITY MANAGEMENT

- SYSTEMATIC PARTICIPATORY PROCESS TO BLEND FARMER KNOWLEDGE ON SOIL QUALITY AND SOIL FERTILITY MANAGEMENT, WITH KNOWLEDGE GENERATED BY SOIL SCIENCE AND AGRICULTURAL RESEARCH

WEBSITE:

HTTP://WWW.WORLDAGROFORESTRY.ORG/DOWNLOADS/PUBLICATIONS/PDFS/B17459.PDF

CONTRIBUTING ORGANIZATION:

World Agroforestry Centre (ICRAF), Brazilian Agricultural Research Corporation (Embrapa), International Centre for Tropical Agriculture (CIAT)

LINK METHODOLOGY

OVERVIEW

The LINK Methodology aims to promote the engagement of small holder producers with modern markets by guiding a multi-stakeholder process of shaping or upgrading inclusive trading relationships with the potential to create win-win situation for all actors involved. For that reason, four key tools are designed to kick off, implement and conclude a participatory innovation process in the iterative manner of a "design-test-check-act" cycle. Key tool 1 - Value Chain Map: A strongly visual approach to the classic value chain analysis, divided into a nested perspective of core processes, partner network and external influences. Key tool 2 - The business model canvas: Adapted from Osterwalder's innovative approach, this participatory tool has proved to be extremely valuable for small-scale farmers, NGOs and buyers in understanding business goals and practices. Key tool 3 - The new business model principles: Represent a set of signposts to help evaluate current business practices in terms of their inclusiveness and to deliver practical ideas on how to enhance a business' inclusiveness. Key tool 4 - The prototype cycle: A mixture of iterative learning and formal monitoring and evaluation approaches, the prototype cycle aims to design, test and evaluate the progress of innovative elements for an existing or new business model on a regular basis and to facilitate the decision between up-scaling aspects that work and redesigning elements that fail. Methods for info gathering The LINK methodology is based on: a) direct experiences of research projects in several countries in Latin America and Africa; b) more than twenty business model case studies which have proved to work for small-scale producers; and, c) the growing literature around business models as a design/development tool to augment the effectiveness of business processes to fight poverty. The methodology is highly adaptive, participatory and open to improvement. The exercises and approaches in the guide are not carved in stone but should rather be used in the way most beneficial for the involved actors.

SUMMARY OF USES

- LINKING SMALLHOLDERS WITH MODERN MARKETS
- KICKING OFF, IMPLEMENTING AND CONCLUDING A PARTICIPATORY INNOVATION PROCESS IN A "DESIGN-TEST-CHECK-ACT" CYCLE

WEBSITE:

HTTP://DAPA.CIAT.CGIAR.ORG/LINKING-SMALLHOLDERS-A-GUIDE-ON-INCLUSIVE-BUSINESS-MODELS/

CONTRIBUTING ORGANIZATION:

CIAT / BILL AND MELINDA GATES FOUNDATION

Livestock and Fish Site Selection Guidelines*

Overview

The Livestock and Fish site selection guideline provide a framework to select the site within the selection value chains in a consistent way across all countries we work in. The guideline lines out who to create and use geographical domains (overlay of different drivers in a GIS environment) to identify potential study area sites. In a workshop, stakeholder validate the map. They also add, score and weight so called soft criteria (criteria which cannot be mapped). In order to come up with a ranking of potential sites. In the last stage, an exercise validates the stakeholder ranking and final sites are selected.

Summary of Uses

- Selecting a site within the selection value chain consistently across countries

Website:

N/A

Contributing Organization:

N/A

Livestock Geo-Wiki*

Overview

The Livestock Geo-Wiki is an online geo-data tool, that allows not only for visualisation of geo-data but also allows for crowd-sourcing. The Geo-Wiki is used to provide a central viewer, validation tool and repository for livestock distributions and production systems data. The module currently contains data on livestock distributions (cattle, chicken, duck, pig, sheep & goat) as well as the intensive, semi-intensive and extensive systems for pig and chicken keeping. Beyond this, the platform aims to develop a comprehensive global livestock information system, and will be complemented by modules on major global benefit and impact linked to the livestock sector in i) poverty and growth, ii) health and nutrition and iii) climate and natural resource management as new data is produced.

Summary of Uses

- Collecting, evaluating or sharing data on livestock distribution
- Validating livestock data

Website:

http://livestock.geo-wiki.org/

Contributing Organization:

International Livestock Research Institute (ILRI), Food and Agricultural Organization (FAO), the Université Libre de Bruxelles (ULB-LUBIES)

Livestock Production System and Productivity Monitoring Tool

Overview

What we use are a series of tools developed for the following 1. To collate initial information at household level on livestock owned within farming systems and identification of constraints in management of various livestock 2. Tools for continuous monitoring (at monthly intervals) of animal productivity (including production, reproduction, adaptation, feeding and management) --these tend to be species specific, so we have tools for monitoring dairy cattle, and for monitoring sheep, and are adapting this for monitoring goats--these have been paper based, but currently we are testing use of mobile phone technology to collate this information from farmers 3. Data storage and provision of feedback messages from information collated--these are still under development, with some testing carried out for dairy cattle production systems.

Summary of Uses

- Collating information at household level on livestock owned
- Identifying constraints in livestock management
- Monitoring animal productivity
- Storing data and provision of feedback messages

Website:

N/A

Contributing Organization:

N/A

Most Significant Change

Overview

Most Significant Change (MSC) is a potentially useful evaluation tool given its simplicity and its use of storytelling to communicate experiences of change, and the who, why, how and why of an event or situation. This relatively new method is based on a qualitative, participatory approach, with stakeholders involved in all aspects of the evaluation and is therefore a shift away from conventional quantitative, expert driven evaluation methods toward a qualitative participant driven approach, focusing on the human impact of interventions. MSC is particularly useful for understanding if and how behavior change has occurred and how an intervention has contribuated to the change. Most Significant Change involves the generation of significant change stories by various stakeholders involved in an intervention. These are stories of significant changes caused by the intervention and can be adapted to also pick up on unexpected changes that may not have clear causal links to interventions. The 'more significant' of these stories are then selected by the stakeholders for depth discussions. This is the heart of the how use most significant change and where many go wrong These discussions bring to the stakeholders' attention the impacts of the intervention that have the most significant affects on the lives of the beneficiaries (Davies and Dart, 2005). Due to the relative simplicity of the approach, which is easy to explain and can be communicated well across cultures, and its emphasis on encouraging project participants to share their stories and experiences in a relatively unstructured and informal way, MSC was thought to be particularly relevant as a means to identify unexpected changes–both positive and negative. The technique has so far been widely, and has been found to elicit a number of unexpected positive project impacts from participants (see for example Sheriff and Schuetz, 2009).

Summary of Uses

- Understanding if and how behavior change has occurred and how an intervention has contributed to the change
- Monitoring and evaluating a programme
- Collecting information to help the management of the programme

Website:

http://www.kstoolkit.org/Most+Significant+Change

Contributing Organization:

N/A

NUANCES-FARMISM

Nutrient Use in Animal and Cropping Systems – Efficiencies and Scales Farm Simulator

OVERVIEW

NUANCES–FARMSIM (Nutrient Use in Animal and Cropping systems – Efficiencies and Scales FARM SIMulator Tittonell et al., 2008a; van Wijk et al., 2009) is a farming systems model with a special focus on organic matter flows within the farm. The model looks at interactions between the crop and livestock components, and assesses how nutrient management strategies work out on estimated productivity and profit of the farming system. To look at the interactions between crops, soil and livestock, component subsystem models are used that are as simple as possible to avoid being overwhelmed by detail, but to include all major activities to allow scenario analysis. Agricultural fields are represented by the FIELD model that contains linked crop and soil models (Tittonell et al., 2010), livestock production (milk, meat and manure) and reproduction are represented by LIVSIM (Rufino et al., 2009), an individual based model, and manure and organic residue management by HEAPSIM (Rufino et al., 2007). Each of the component models can have multiple instances depending on the configuration of the farm studied and have been tested in detail individually. NUANCES–FARMSIM and the component models are used together with secondary data, expert knowledge and empirical agronomic experiments or feeding experiments to generate understanding of the key processes that control farm performance. Farmers' decisions on resource allocation are represented in the model based on farmers' responses during the detailed system characterization and observations in the field. Discussions with key informants and farmers are conducted, both individually and in groups, to understand farmers' objectives and aspirations and the major constraints faced (Misiko, 2007; Misiko et al., 2008). These discussions feed into the choice of future scenarios to be explored. The model has been applied to study farming systems in West, East and Southern Africa, and to study how individual farms differing in the amount production resources (e.g. amount of land, number of livestock) available respond differently to specific intervention options.

SUMMARY OF USES

- IMPLEMENTING A SCENARIO ANALYSIS TO EVALUATE DECISIONS ON RESOURCE AND LABOUR ALLOCATION AT FARM SCALE, CONSIDERING A NUMBER OF DIFFERENT FIELDS

WEBSITE:

HTTP://MODELS.PPS.WUR.NL/SITES/MODELS.PPS.WUR.NL/FILES/AFRICANUANCES%20WORKING%20DOCUMENT%201.PDF

CONTRIBUTING ORGANIZATION:

INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE (ILRI), WAGENINGEN UNIVERSITY AND RESEARCH CENTRE (WUR)

Nile Goblet*

Overview

Nile Goblet is a software that allows stakeholder to introduce suitability ranges for agricultural practices for several criteria (layers), the software then return suitability maps where all the suitability ranges introduced are met. This tool as been developed for the Nile Basin Challenge Program and therefore comes with a database of geographical layers for the Nile, and has rainwater management agricultural practices already programmed as an illustration.

Summary of Uses

- Introducing stakeholders to suitability ranges for agriculture practices for several criteria
- Producing maps where all the suitability ranges introduced are met

Website:

http://www.qlands.com/other_files/GOBLET-Setup.exe

Contributing Organization:

ILRI/IWMI, Nile Bassin Development Challenge Program

Participatory Extension Approach

Overview

Participatory extension is a learning approach for strengthening individual and organizational capacities of rural people and their livelihoods to enable them to better cope with development in a self-reliant way. It facilitates a process of self-organization and emancipation of people in rural communities to enable them to better articulate their needs for agricultural and social services and represent themselves to service providers and authorities (IMAWESA, 2012). Central to the facilitation of knowledge management processes at community level are four principles: The village as an organization, linkages and cooperation, experimentation, and learning from experience. Implementing these principles at community level enhances increased local organizational capacity and social and economic impacts (IMAWESA, 2012). The following core values guide the implementation of the participatory extension process at community level: Self reliance Ownership and control Inclusivity and equal opportunities Self organization of communities Conservation of natural resources Sharing and co-operation Building of local experiences and skills Learning

Summary of Uses

- Strengthening individual and organizational capacities of rural people and their livelihoods to enable them to better cope with development in a self-reliant way
- Knowledge management process at community level

Website:

http://cg-parade.wikispaces.com/profile2

Contributing Organization:

International Water Management Institute (IWMI)

Participatory Variety Analsis

Overview

"Participatory variety analysis is an approach to provide choices of varieties to farmers for increasing production within the constraints of their socioeconomic and agro-ecological condition. It is also a selection process for testing released or promising genotypes in farmers' field. Participatory variety analysis includes research and extension methods to deploy genetic materials at on- farm experiment. A variety developed through participatory variety selection is more likely to meet the demands of different stakeholders.

Participatory variety analysis comprises three steps to identify a preferred variety: - Situation analysis and identification of farmers' needs - Search for genetic materials to test under farmers' conditions - Experimentation of on-farm research and dissemination of preferred varieties"

Summary of Uses

- Providing choices of varieties to the farmers for increasing production in their diversity of socioeconomic and agro-ecological conditions.

Website:

http://cg-parade.wikispaces.com/profile15

Contributing Organization:

N/A

Participatory Video*

Overview

Participatory video is a form of participatory media in which a group or community creates their own film. The rationale is that making a video is easy and accessible, and is a great way of bringing people together to explore issues, voice concerns or simply to be creative and tell stories. It is therefore primarily about process, though high quality and accessible films (products) can be created using these methods if that is a desired outcome. This process can be very empowering, enabling a group or community to take their own action to solve their own problems, and also to communicate their needs and ideas to decision-makers and/or other groups and communities. As such, participatory video can be a highly effective tool to engage and mobilize marginalized people, and to help them to implement their own forms of sustainable development based on local needs. The objective of participatory video is to create a climate that encourages individual and group development. The specific technical and organizational skills learnt, and the video produced are part of the work, but it is the positive change that participants go through during the process that is the most important outcome. This informs the activity and approach at every stage of the work. Participatory videocan have far-reaching benefits and can be a potent tool for group empowerment (Shaw and Roberson, 1997).

Summary of Uses

- Creating a climate that encourages individual and group development
- Engaging and mobilizing marginalized people

Website:

http://www.insightshare.org/

Contributing Organization:

Insight Share

Photo Safari*

Overview

Photo safari emerged from Farmer-led Documentation (e.g. Rüter & Piepenstock, 2006, Prolinnova) as a reaction to often observed extractive documentation where outsiders are controlling the process, and the information that has been documented being stored beyond the reach of the community . FLD, on the other hand, allows people tell their own stories in their own language. The resulting products can be used by community members for internal learning within the community, for exchange with other communities and for sharing with development workers, researchers and policy-makers. Photo safaris involve farmers in documenting the problems that they face. Groups of farmers are equipped with a Digital Camera and, depending on the objective, tasked to document problems they encounter or examples of innovative solutions. Following a transect through the community, for example, farmers then document the problems or solutions they consider to be priorities. If possible, photos are uploaded to computer and printed onsite, so that they can be presented back to farmers and other stakeholders. Interpreting the results required caution, however, as the photographic nature may encourage participants to focus on the most visually apparent issues within the site itself, at the expense of less tangible, seasonal or off-site issues.

Summary of Uses

- Capturing tacit knowledge
- Looking at a context from different perspectives
- Knowledge sharing
- Engaging communities and stakeholders
- Increasing awareness

Website:

http://www.prolinnova.net/fld

Contributing Organization:

Overseas Development Institute (ODI)

PIPA

Participatory Impact Pathways Analysis

Overview

Participatory Impact Pathways Analysis (PIPA) is a practical planning, and monitoring and evaluation approach developed for use with complex projects in the water and food sectors. PIPA begins with a participatory workshop where stakeholders make explicit their assumptions about how their project will achieve an impact. Participants construct problem trees, carry out a visioning exercise and draw network maps to help them clarify their 'impact pathways'. These are then articulated in two logic models. The outcomes logic model describes the project's medium term objectives in the form of hypotheses: which actors need to change, what those changes are and which strategies are needed to realize these changes. The impact logic model describes how, by helping to achieve the expected outcomes, the project will impact on people's livelihoods. Participants derive outcome targets and milestones, which are regularly revisited and revised as part of project monitoring and evaluation (M&E). PIPA goes beyond the traditional use of logic models and log frames by engaging stakeholders in a structured participatory process, promoting learning and providing a framework for 'action research' on processes of change

Summary of Uses

- Planning, monitoring and evaluation approach for water and food sector
- Participatory workshop for development of log frames/logic models

Website:

http://pipamethodology.pbworks.com/w/page/70283575/Home%20Page

Contributing Organization:

Challenge Program on Water and Food (CPWF), International Food Policy Research Institute (IFPRI)

Plug-in Principle

Overview

Scientific knowledge cannot replace existing knowledge or situation, it only “betters” it. Thus we are ‘bettering’ agents not change agents.

The plug-in (intervention) is narrower as compared to existing knowledge (in any society or community).

To successfully plug-in, there is need to thoroughly understand the existing situation. That requires some level of acceptance of interventionists by the people. Thus interventionists need to spend time in the communities and with community members.

The amalgam informal and scientific knowledge is very much dependent on the degree to which interventionists understand and appreciate the existing situation. This understanding and appreciation of the existing situation helps to modify intervention strategies to suit particular situations.

Summary of Uses

- Understanding the existing situation by observing it

Website:

http://cg-parade.wikispaces.com/profile3

Contributing Organization:

N/A

Polyscape

Overview

Polyscape is an ecosystem service mapping approach that uses both local and expert knowledge to generate a representation of local landscape structure showing areas of potential and actual ES generation. The toolkit marshals scientific evidence to inform stakeholder negotiation at this key, operational scale, and is embedded in a broader analysis of policy drivers and feasible options for change. The maps connect field and farm level land use decisions to ecosystem service generation at a local landscape scale. The maps are developed iteratively with stakeholder involvement from the outset and land use change can be explored in terms of synergies and trade-offs amongst any number of ES.

Summary of Uses

- Mapping development with stakeholder involvement to integrate local and expert knowledge, generating a representation of local landscape structures
- Showing areas of potential and actual ecosystem generation

Website:

http://cg-parade.wikispaces.com/profile18

Contributing Organization:

Challenge Program on Water and Food (CPWF), World Agroforestry Center (ICRAF)

RAAIS*

(Rapid Appraisal of Agricultural Innovation Systems)

Overview

Agri-food systems are complex webs of people, organisations, technologies and rules. In such complexity, it is essential to identify entry points for innovation that are cost-efficient and have a high return on investments in terms of achieving development impact. Furthermore, innovations need to be supported by stakeholder groups.

Rapid Appraisal of Agricultural Innovation Systems, RAAIS is a participatory, diagnostic tool for integrated identification and analysis of complex agricultural problems, and the design, implementation and monitoring of AR4D innovations. RAAIS involves different stakeholder groups (farmers, government, private sector, etc.), which provides a basis for:

1. Situational Analysis of constraints and opportunities for innovation in agri-food systems
2. Design of Theory of Change and Impact Pathway together with stakeholders around a coherent set of entry points for innovation that guide project implementation
3. Developing a baseline for monitoring, evaluation and learning to support adaptive management and enhance the effectiveness of AR4D
4. Strengthening multi-stakeholder partnerships for impact

RAAIS modules include:

- RAAIS light: RAAIS workshops ($5000 per workshop, incl. training of facilitators, data analysis and reporting)
- RAAIS medium: In-depth interviews, surveys and secondary data analysis to validate RAAIS workshop outcomes (+$15,000 per site)
- RAAIS full: Theory of change and action plan for implementation of intervention plans (+$5000)

Experiences?

RAAIS was used in 17 countries across 3 continents. GIZ Zambia used it to design the €12M One World No Hunger project.

More on RAAIS:

- Schut et al., 2015. RAAIS conceptual paper in Agricultural Systems. DOI: http://dx.doi.org/10.1016/j.agsy.2014.08.009.
- Schut et al., 2015; 2016. 2 Research papers that apply RAAIS in Agricultural Systems: http://dx.doi.org/10.1016/j.agsy.2014.08.009 and http://dx.doi.org/10.1016/j.agsy.2016.03.005
- RAAIS Toolkit: https://www.wageningenur.nl/en/article/RAAIS-Toolkit.htm.

Summary of Uses

- Identification and analysis of complex agricultural problems
- Prioritization of entry points for innovation in agri-food systems
- Starting point for developing a theory of change for agricultural research for development
- Baseline for participatory monitoring and evaluation of agricultural research for development

Website:

http://www.sciencedirect.com/science/article/pii/S0308521X14001115

Contributing Organization:

International Institute of Tropical Agriculture (IITA), Wageningen University and Research Centre (WUR)

Reflexive Monitoring in Action*

Overview

Reflexive Monitoring in Action (RMA) is an interactive methodology to encourage reflection and learning within groups of diverse actors that seek to contribute to system change in order to deal with complex problems. It builds on the assumption that recurrent collective reflection on the current system (barriers as well as opportunities) helps to stimulate collective learning and design and adapt targeted systemic interventions. While doing so, these initiatives develop new or change local rules, practices and relations within the network of actors involved. This takes place in the muddiness of everyday struggles of change trajectories (Van Mierlo et al., 2010a, 2010b, 2013). Key to this methodology is institutional changes while evaluating these ex-durante. Reflexivity is the outcome; the emergent property of an intervention programme or bottom-up innovation initiative developing new coordinated practices while the rules of the game change along in the process of designing new systems. RMA builds on the premise that while the contribution of a single system innovation initiative to a long, capricious system innovation processes cannot be assessed, it is possible to characterise the actions of a project and their outcomes in terms of relevance for system innovation. The ongoing innovation process is evaluated with the aid of middle-range theories about processes of societal change, including communication, learning, network building and conflict management as well as sociological and institutional theories about system innovation and social practices specifically.

The reflexive monitor's frame of reference is the particular system innovation ambition i.e. the drive to develop new rules, relations and material artefacts as articulated by the innovators (if necessary with the aid of the evaluator) rather than the needs of users. Monitoring activities are an integral part of the change initiative; the appointed reflexive monitor, whether a hired person, or someone from the project team, usually starts at the moments of interaction, such as regular team meetings to observe how the system innovation ambition is articulated, whether learning is taking place and ambitious collaborative actions are being designed and carried out. Challenges encountered on the pathway of change in the form of resistance to change that relates to the institutional setting of the innovation initiative, define the activities of the reflexive monitor. Hence, the reflexive monitor is not only an observer but also a facilitator and a sparring partner, with sufficient distance to take a critical stance if needed. In a diversity of ways, he or she encourages participants to reflect upon the relationships between the project activities and results and its institutional setting, and the ambition to change in both short-term actions and long-term goals and future perspectives. In this way, RMA addresses the mechanisms that provide stability to the current unsustainable systems.

Summary of Uses

- Encouraging reflection and learning within groups of diverse actors seeking structural change
- Stimulating collective learning
- Developing new or changing local rules, practices and relations

Website:

http://www.wur.nl/nl/show/Reflexive-Monitoring-in-Action.htm

Contributing Organization:

Wageningen University and Research (WUR) and Free University Amsterdam (VU)

River Basin Game*

(AKA The Water Marbles Game)

Overview

The River Basin Game is an effective simple-to-operate common-pool game using glass marbles and a sloping table or board. It promotes mutual understanding of different people's levels of access to water and allows participants to actively react to scenarios. Experience shows that participants become highly animated and, by the end of the game, have a good understanding of system dynamics, common-pool resource pitfalls and of which issues are most critical and of what solutions might be considered. If the game-playing is part of a workshop that is spread over two days, participants are able to contribute in detail to new solutions and institutional agreements. The second day can follow up on lessons learnt and bring together various institutions to assist improving the equity of supply. The game can also be conducted in sessions that last 1-2 hours and alongside other decision-aid tools such as spreadsheets. The cited paper includes a literature review of gaming in water resources management, a complete description of the game, details of the practical arrangements required to organize a game-playing session and possible approaches to evaluate the effectiveness of a session (Lankford, et al., 2004). The River Basin Game is a dialogue tool for decision-makers and water users that has been tested in medium to small catchments in Tanzania and with many other types of stakeholders over a decade in countries such as Nigeria, Rwanda, Zambia and Swaziland. The 'marbles game' (also known as) has been applied to these river basins: Nile, Zambezi, Mekong and Rufiji. It comprises a physical representation of the catchment in the form of a large wooden board. The central river flows between the upper catchment and a downstream wetland, and has on it several intakes into irrigation systems of varying sizes. Glass marbles "flow" down the channel represent river water. Participants place small sticks acting as weirs across the river to capture the marbles and scoop them into irrigation systems where they sit in small holes - thereby meeting the water requirement of that particular plot of rice or irrigation activity. The players learn that being at the top of the river has advantages, whilst tail-end systems experience water shortages. The game purposively goes through four stages; an introduction; a competitive stage whereby individuals compete for marbles (the search for water); a livelihoods stage when players consider 'the search for money' and a final collaborative stage where players cooperate over the distribution of the marbles to the different sectors on the board. Players then break into discussion groups to explore two related questions. These are: 'what technical and institutional solutions need to be considered and be initiated in order to arrive at a more equitable and productive sharing of limited water supplies? The second question is: What measures need to be taken to promote the sharing of water resources by those advantaged and located at the top of the catchment or irrigation system? The implications of different management strategies can be evaluated by various stakeholder groups including users and support agencies (Lankford, et al., 2004).

Summary of Uses

- Entering into, framing and resolving issues of conflict over natural resources

Website:

https://brucelankford.org.uk/research/natural-resource-gaming/

Contributing Organization:

N/A

RUMINANT

OVERVIEW

RUMINANT IS AN IPCC TIER 3 DIGESTION AND METABOLISM MODEL FOR RUMINANTS. THE MODEL ESTIMATES PRODUCTION OF MILK AND MEAT, MANURE PRODUCTION, N EXCRETION, AND METHANE EMISSIONS FROM FEED USING STOICHIOMETRIC CALCULATIONS. A DETAILED DESCRIPTION IS PROVIDED IN HERRERO ET AL. 2013.

SUMMARY OF USES

- ESTIMATING PRODUCTION OF MILK AND MEAT, MANURE PRODUCTION, N EXCRETION, AND METHANE EMISSIONS FROM FEED USING STOICHIOMETRIC CALCULATIONS

WEBSITE:

N/A

CONTRIBUTING ORGANIZATION:

International Livestock Research Institute (ILRI)

Site Selection Guidance for Humidtropics

Overview

It is extremely challenging to formulate and evaluate agricultural development strategies for regions as large and diverse as proposed in the Action Areas, and it will require multiple perspectives and thoughtful simplifications (Omamo et al., 2006). Empirical studies in Ethiopia, Kenya and Uganda (Pender et al., 1999; Pender et al., 2004; Ehui and Pender, 2005) suggest that interaction of the three socio-economic and biophysical layers —population density, agricultural potential and market access — provide good explanatory power in predicting the type of agricultural enterprises and development pathways encountered in different rural communities, as the layers are strongly related to the feasibility and attractiveness of specific development and livelihood strategies (Wood et al., 1999). Omamo et al. (2006) used for East and Central Africa (ECA) GIS tools and databases to gain a better appreciation of the regional patterns of agriculture and of agricultural development challenges and opportunities. The GIS analysis disaggregates the region into geographical units, called 'development domains', in which similar agricultural development problems or opportunities are likely to occur, based on the spatial layers population density, agricultural potential and market access. The breakdown is done by classifying each of the three factors into two values: high or low.

Summary of Uses

- Selecting action areas for humidtropics
- Identifying critical areas of variation across the humid tropic regions

Website:

https://cgspace.cgiar.org/bitstream/handle/10568/49609/PR_HTSiteSelection.pdf?sequence=1

Contributing Organization:

N/A

SOFT

Selection of Forages for the Tropics

Overview

Tropical Forages is a powerful tool for selecting forage species suitable for local conditions in the tropics and subtropics. It is invaluable for agricultural researchers and extension officers involved in improving animal production. Tropical Forages allows you to speedily: - Identify forage species suitable for your climate, soils, production system and management via a selection tool built on LUCID™. - Access comprehensive information on these species with details of adaptation, uses and management of forage species, cultivars and elite accessions. - View images of the plants and their use. - Search a comprehensive database of scientific references with abstracts. Users can be guided through the Lucid selection tool with Help notes and tutorials. A detailed glossary explains botanical and management terms.

Summary of Uses

- Selecting suitable forage species for local conditions in the tropics and subtropics

Website:

http://www.tropicalforages.info/

Contributing Organization:

International Livestock Research Institute (ILRI), International Center for Tropical Agriculture (CIAT), Commonwealth Scientific and Industrial Research Organisation (CSIRO), Department of Primary Industries and Fisheries (DPI&F)

TAGMI

Targeting AGwater Management Interventions

Overview

The Targeting AGwater Management Interventions (TAGMI) is a decision support tool that facilitates targeting and scaling-out of three different Agricultural Water Management (AWM) technologies in the Limpopo and the Volta River Basins. This online tool displays the output of a Bayesian network model that assesses the influence of social and bio-physical factors on the likelihood of success of implementing different AWM technologies. The Bayesian network model was developed iteratively, in collaboration with local researchers and experts, and merges knowledge pools from technical experts to local agriculture extension agents. TAGMI displays spatially explicit model results at the district scale, based on available data, to determine which districts may be better suited than others for a particular technological intervention in Volta and Limpopo Basin countries. TAGMI helps to answer the question: will an intervention successfully applied in one location have a reasonable chance of success at other locations? The answer, provided with a measurable degree of certainty, suggests a way forward for scaling-out AWM interventions. TAGMI Assesses the Likelihood of Success. The tool models the relationship between social and bio-physical factors and successful implementation and long-term adoption of agricultural water management technologies. It is intended for non-technological expert users who want to know which parts of the river basins have conditions suitable for successful implementation of a planned AWM intervention. It is Science Based. Taking social and human resources into account reflects the fact that there are further enabling conditions required beyond the purely bio-physical conditions that dictate whether or not a technology is appropriate for introduction. The conceptual framework for the Bayes model is informed by the Sustainable Livelihoods Framework (DFID 1999). For more detailed information about the Bayes model behind the tool see the Model Technical Documentation It is Evidence Based. The Bayesian network model makes use of available data on key characteristics in a systematic way to suggest the likelihood of success of an intervention. It estimates how different contextual factors interact to influence success. This model and tool are based on the premise that, while absolute certainty is unobtainable, degrees of certainty are both obtainable and useful when using the available information in a systematic way.

Summary of Uses

- Decision support tool
- Online tool, merges knowledge from experts and local agents
- Determines which districts may be better suited for a particular technological intervention

Website:

http://iwmi-tagmi.cloudapp.net/

Contributing Organization:

Stockholm Environment Institute-York

TOA-MD*

(TradeOff Analysis for Multi-Dimensional Impact Assessment)

Overview

"The Tradeoff Analysis Model for Multi-dimensional Impact Assessment (TOA-MD) is a parsimonious, generic model for analysis of technology adoption (e.g. adaptation strategies), impact assessment (e.g. climate change), and ecosystem services analysis. The TOA-MD model simulates technology adoption and impact in a population of heterogeneous farms. There are several features of this model that are novel as compared to most other economic models being used for technology adoption and climate impact assessment. The TOA-MD represents the whole farm production system (i.e. includes crops, livestock and aquaculture sub-system, and the farm household characteristics). The TOA-MD is a model of a farm population, not a model of an individual or "representative" farm. Accordingly, the fundamental parameters of the model are population statistics – means, variances and correlations of the economic variables in the models and the associated outcome variables of interest. With suitable bio-physical and economic data, these statistical parameters can be estimated for current systems. Using established methods we can estimate how the TOA-MD model parameters would change in response to climate change or technological adaptations. These changes in model parameters are the basis for the climate impact, vulnerability and adaptation analysis.

The Tradeoff Analysis for Multi-Dimensional Impact Assessment (TOA-MD) is a simulation model designed to be used by multi-disciplinary research or technology deployment projects to carry out quantitative assessments of economic, environmental and social impacts associated with the adoption of agricultural technologies. TOA-MD has a number of desirable features: - Feasible and low-cost: TOA-MD can be implemented with the kinds of data that are typically available or that can be acquired in the course of a research or technology deployment project at reasonable cost. TOA-MD can be used to target data collection, thus avoiding the "shotgun" approach to data collection and lowering the cost of impact assessment. - User friendly: TOA-MD can be learned and used by researchers following the Learning Modules that are distributed with the model and by attending training workshops organized by the TOA team, plus time needed to acquire data and carry out analysis. TOA-MD is programmed in Excel, and provides a data template to help users identify data needed to carry out an analysis. - Scientifically credible: TOA-MD meets the standard of good science: it is based on a rigorous statistical and economic foundation of research published in respected, peer-reviewed journals; environmental indicators can be based on data in the scientific literature, on field measurements, or derived from process based simulation models. - Accurate: TOA-MD produces results comparable to what can be achieved with much more complex simulation models. - Consistent, transparent, and a public good: TOA-MD provides a generic framework that can be applied to most systems, thus providing comparability across projects. The model is public and transparent. Data and analysis can be evaluated independently, and data developed by projects can be archived and used by other projects.

The TOA Team may be able to offer some limited technical support to TOA-MD Model users upon request. However, we ask users to be aware that the free technical support we provide is a voluntary activity and our ability to respond to questions is limited.

The TOA Project Team also periodically offers training courses to interested organizations and user groups. We encourage prospective users of the TOA-MD model to incorporate training plans into their project plans and budgets. Please contact us to estimate the costs of a training plan and availability. Based on our experience, we recommend a series of two, 3-5-day workshops. At the first workshop, the TOA-MD model concepts and software are covered, and data requirements of the users' projects are discussed. After the first workshop, participants collect data and carry out preliminary analysis. At the second workshop, the participants' data and analysis are reviewed, and questions are addressed.

Summary of Uses

• Carrying out quantitative assessments of economic, environmental and social impacts associated with the adoption of agricultural technologies, environmental and economic changes, and ecosystem services

Website:

http://agsci.oregonstate.edu/tradeoffs

Contributing Organization:

Oregon State University

Tool for Monitoring and Evaluation of Innovation Platforms*

Overview

The conceptual framework for monitoring and evaluation of innovation platforms is based on elements from new institutional economics and marketing relationship management to model the impact pathways within innovation platforms and how they contribute to attaining the objectives of the rural communities involved. The field research protocol is based on focus group discussions, semi-directive interviews of key stakeholders associated with the innovation platforms and individual surveys of platform members. The data collected is both qualitative and quantitative in nature allowing useful triangulation to test the model. Successive empirical tests of the model in different contexts should allow long-term strengthening and field validation of the conceptual framework.

Summary of Uses

- Evaluating the impact of innovation platforms on agrifood value chains development Impact evaluation

Website:

http://www.slideshare.net/ILRI/a-conceptual-framework-to-evaluate-the-impact-of-innovation-platforms-on-agrifood-value-chains-development

Contributing Organization:

International Livestock Research Institute (ILRI)

Typology Guideline

Overview

The typology guidelines are meant to raise awareness of the opportunities and pitfalls when making typologies. The guideline will show the different purposes for which typologies can be made, and how this is reflected in the methodology. Furthermore, potential indicators are presented for different aspects that can be included in a typology. Also a list with contact persons for the different tools and approaches in the methodology will be included. Throughout the document, a real life example will be presented to clarify the different methods and approaches.

Summary of Uses

- Developing typologies

Website:

N/A

Contributing Organization:

N/A

Value chain Assessment Tools

Overview

"This tool is a producer level for Value Chain Assessment as part of the diagnostic phase of the Value Chain Development theme of the CGIAR Research Program on Livestock and Fish. It provides a description of different PRA and group discussion exercises, to identify constraints and bottlenecks that limit the delivery of high quality and affordable animal sourced food to poor consumers in the target countries. The objectives of the tool components are to:

• Characterize the L&F production systems and value chain in a particular site

• Identify constraints, barriers to participation by poor men and women, opportunities for value chain upgrading and expansion, and associated risks with particular regard to domains of feeds, breeding, animal health and food safety

• Identify solutions and opportunities for improvement

The tools are designed to gather data and information to enable researchers and other users conduct value chain analyses using various methods including econometrics tools (depending on the data and question). They cover value chain mapping, households level data from producers, traders, processors and consumers. They include guidelines on what information to gather to write a situational analyses reports. There are guidelines to the specific tools (e.g. description for FG discussions trying gather gender-disaggregated data). Most of the household level data are disaggregated by gender. The producer benchmarking tools is very comprehensive covering marketing, animal disease, production, demographic, food security, feed and inout related data."

Summary of Uses

- Characterize the Livestock and Fish production systems and value chain in a particular site
- Identifying constraints or barriers to participation
- Identifying opportunities for value chain expansion and upgrading
- Identifying risks associated with domains of feed, breeding, animal health and food safety
- Identifying solutions and opportunities for improvement of the value chain

Website:

http://livestock-fish.wikispaces.com/VC_Toolkit

Contributing Organization:

International Livestock Research Institute (ILRI) (PTVC and L&F)

WAT-A-GAME

OVERVIEW

Wat-A-Game is a useful tool for bringing together a diverse group of stakeholders to play with scenarios. Because scenario building is presented in the context of a game, participants do not feel threatened or pressured to make binding decisions. Wat-A-Game uses simple materials and a supporting software for designing and running participatory simulations (i.e. role playing games) for water management, policy design and education. It can be easily adapted to a range of cases, at different scales and for various water related issues. The game illustrates how water flows, how it is polluted, transformed, shared, and used. Participants can choose how they obtain, use, and share water. They can decide among various actions or strategies for themselves and their community, with consequences on their household economy, their satisfaction, labor, and the surrounding ecosystems. New policies can be invented and tested in the group.

SUMMARY OF USES

- BRINGING TOGETHER DIVERSE GROUPS OF STAKEHOLDERS
- DESIGNING PARTICIPATORY SIMULATIONS FOR WATER MANAGEMENT, POLICY DESIGN AND EDUCATION (ADAPTABLE FOR A RANGE OF CASES)

WEBSITE:

HTTPS://SITES.GOOGLE.COM/SITE/WAGHISTORY/

CONTRIBUTING ORGANIZATION:

CEMAGREF—CIRAD UMR G-EAU

Women's Empowerment in Agriculture Index

Overview

The Women Empowerment Index in Agriculture (WEAI) is used to measure women's empowerment, agency and inclusion in agriculture in five domains: - decisions about agricultural production, - access to and decision-making power over productive resources, - control over use of income, - leadership in the community - time use. The tool also measures women's empowerment relative to men within their households.

Summary of Uses

- Measuring women's empowerment, agency and inclusion in agriculture relative to men within their households

Website:

http://www.ifpri.org/topic/weai-resource-center

Contributing Organization:

International Food Policy Research Institute (IFPRI), United States Agency for International Development (USAID), Oxford Poverty and Human Development Initiative (OPHI)